



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,666	04/21/2004	Newman Mayer Bortnick	A01472	4916

21898 7590 11/06/2006  
ROHM AND HAAS COMPANY  
PATENT DEPARTMENT  
100 INDEPENDENCE MALL WEST  
PHILADELPHIA, PA 19106-2399

EXAMINER

POULOS, SANDRA K

ART UNIT	PAPER NUMBER
----------	--------------

1714

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/828,666

Applicant(s)

BORTNICK ET AL.

Examiner

Sandra K. Poulos

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/12/04; 9/20/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 7-8 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz (US 2002/0193521) in view of Beall (US 5,552,469).

Cruz discloses polymeric nanoparticles (PNPs) having a mean diameter of 1 to 50 nm, comprising polymerized units of at least one multi-ethylenically unsaturated monomer (para 1). It is preferred that the amount of polymerized multi-ethylenically unsaturated monomer is from about 1% to about 80% based on the weight of the PNPs, more preferably 1-60 wt%, most preferably 1-25 wt% (para 15). Suitable multi-

Art Unit: 1714

ethylenically unsaturated monomers are listed in paragraph 16 and suitable PNPs are in paragraph 36. In particular, MMA/BA/DMAEMA/TMPTMA is disclosed in one embodiment (para 59). The DMAEMA portion is the "second monomer" the MMA and BA portions are both considered a "third monomer" (para 26, 59). From the examples, the MMA component is generally present in an amount of about 20-85%, the multi-ethylenically unsaturated monomer (DEGDMA or DVB) is about 10-30%, and the other monomer block constitutes the remaining portion (Table 5.1). The PNPs may be incorporated into the nylon resin in an amount of 0.1-50 wt% or a PVC blend in an amount of 0.7-40 wt% (para 59-60). The PNPs can be incorporated into a plastic by admixing the particles or a dispersion of the particle with other dissolved or dispersed polymer and/or other plastics additives as known in the art, such as fillers and the like (para 51).

Cruz does not expressly disclose combining the PNPs with clay nanoparticles.

Beall discloses when finely divided platelet particles are dispersed into a polymer, they impart greater mechanical reinforcement and a higher glass transition temperature to the polymer matrix than do comparable loadings of conventional reinforcing fillers of micron size, and can impart lower permeability to matrix polymers than do comparable loadings of conventional fillers (col 6, lines 7-23). When nanoscale particulate dispersed platelet particles to a polymer, there is typically an increase in tensile modulus and ultimate tensile strength or an increase in ultimate impact resistance or glass transition temperature (col 19, lines 6-11). The nanoscale particles used in the examples are montmorillonite and the amount is from 0.05 to 40 wt% (col

Art Unit: 1714

13, lines 1-27). Beall discloses that the polymer can be almost any type selected from thermoplastics, rubbers, and thermosets (col 13-17), including PVC and nylon, of which are used as a matrix polymer in the Cruz composition. Thus it would have been obvious to one of ordinary skill in the art to incorporate those amounts of nanoscale clay such as in Beall as the plastic additive in Cruz in order to impart greater mechanical reinforcement and increase in tensile modulus/strength in the final product.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4,558,075 discloses polymer microparticles of a monoethylenically unsaturated monomer ranging in size from 10 nm to 10,000 nm.

US 4,814,373 discloses a latex composition with dispersed polymer particles and clay.

US 5,312,863 discloses an MMA/DMAEMA composition that includes materials such as clays.

US 6,218,465 discloses polymers such as BA/EA/BMA TMPTMA including modified clay and inorganic filler of nanoscale size.

Art Unit: 1714

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sandra K. Poulos whose telephone number is (571) 272-6428. The examiner can normally be reached on M-F 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SKP

Sandra K. Poulos

*Vasu Jagannathan*  
VASU JAGANNATHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700